

ABSTRACT OF THE INVENTION

The present invention relates to an optical transmission system having a structure to enable signal transmission while maintaining superior transmission characteristics over a broader wavelength band. Signal light outputted from a signal light source has a positive chirp, and propagates through a transmission line fiber to an optical receiver, after being Raman-amplified by a lumped Raman amplifier. The lumped Raman amplifier includes, as a Raman amplification fiber, a high-nonlinearity fiber having a negative chromatic dispersion at a wavelength of the signal light and intentionally generating a self-phase modulation therein. The positive chirp of the signal light propagating through the high-nonlinearity fiber is effectively compensated by both of the negative chromatic dispersion and the self-phase modulation generated in the high-nonlinearity fiber.